



## The Minuteman Repeater Association

*A non-profit organization providing communications infrastructure and volunteers for community and emergency events.*



# The Minuteman

Volume 47, Number 5

May 2018

***Membership Meeting ~ Wednesday, 16 May 7:00 PM***

***Annual Meeting & Elections (see below)***

***Talk: One Ham's Journey with Antennas ~ Larry Banks, W1DYJ***

**Location: Campion Center, Weston (See Page 3)**

**Talk-in: 146.79 pl 146.2**

During the 56 years that Larry has been a ham, he has built and used many antennas. Using ARRL awards as goals, he will survey his antennas in Woburn and Harpswell, ME, as he pursued these awards. Some antenna theory will be included.

This is not a how-to talk, it is a you-can-do-it-too talk, designed to get you thinking.

Larry was licensed in 1962 as novice KN1VFX and then Technician, K1VFX. He received W1DYJ in 1966 while in college in Cambridge. He was an engineer and manager for Hewlett-Packard Medical in Waltham and Andover from 1969 to 1993. From 1985 to 1993 he was the Section Manager responsible for establishing the Cardiac R&D lab's Computer Aided Design environment, the SW Testing and Quality group, and ongoing Technical Education. Moving to HP Medical Education in 1993, he was responsible for technical (R&D) education and Project Management training. He became Agilent Technology's manager for their global LMS (Learning Management System) when Agilent split out of HP in 1999. "Retiring" in 2005, he consulted for Avago Technologies (now Broadcom) serving as global manager for their corporate LMS until 2012. Larry holds three degrees in Electrical Engineering from MIT. When he is not experimenting with antennas, he chases DX and contests (160 through 432), both in Woburn and at his second home in Maine, and travels with his wife Maren. He is also the Net Manager and Newsletter Editor for the MMRA, publications manager for FEMARA, and a member of the YCCC and NEWS.

### ***MMRA Officer Nominations:***

- ♦ KG1H David Wolfe – President
- ♦ WA1MDD John Spencer -- Vice President
- ♦ K1KWP Kevin Paetzold – Treasurer
- ♦ N1DCH David Hornbaker – Secretary
- ♦ N1NVK Clark Conti – Director → 2020
- ♦ N1DDK James Lee – Director → 2020

***Nominations for Clerk are still solicited***

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## About the Minuteman Repeater Association

The Minuteman Repeater Association (MMRA) is dedicated to Amateur Radio and public service. The MMRA maintains a large system of repeaters in Eastern Massachusetts.

The MMRA meets (usually) on the 3rd Wednesday of each month from September to June. Meeting times, locations, and talk-in frequency vary and are announced in this newsletter and on weekly nets. Meetings are open to all interested parties. Guest speakers and programs of general interest occur in September, November, January, March, and May. The intervening meetings are also open to all members and are for general business.

The Minuteman newsletter is Emailed one week before each general interest meeting. Members are encouraged to submit articles which can be sent to the editor at [newsletter@mmra.org](mailto:newsletter@mmra.org). The deadline for articles is the last Friday of the month preceding the meeting.

Each Tuesday evening at 8PM the MMRA links most of the repeaters for an open net. The topic is "Technical Information and Other Stuff". Join us!

Membership in the MMRA is open to all radio amateurs. Annual dues are \$25 per individual or \$35 per family. See our website for details.

Email to the club leadership should be sent to [contact@mmra.org](mailto:contact@mmra.org). The MMRA maintains a web site at: <http://www.mmra.org/>

An email distribution list for club members named "MMRA" is at: <http://groups.yahoo.com/>

You can also follow us on twitter @mmraham and like us on Facebook: <https://www.facebook.com/mmraham>

### MMRA QRM Policy

MMRA members and all other operators are strongly encouraged to report repeater activity that does not abide by Part 97 rules or accepted amateur radio practice to the board of directors at [contact@mmra.org](mailto:contact@mmra.org) or via other means.

The most effective way (and probably the only effective way) to deal with an individual causing QRM is to NOT engage that individual on the air. Please include the time and date of any incident. Measures are being taken to make audio recordings of repeater activity.

### Repeater and Frequency Information

Band	XMTR Location	Freq	PL	Call	Linking	
					To Hub 1	To Hub 2
MMRA Voice Repeaters						
10m	Marlboro East	29.680	131.8	W1MRA	PTL	PTL
6m	Marlboro East <i>Rmt receive Marlboro West: PL=100</i> <i>Rmt receive Hopkinton: PL=173.8</i>	53.810	71.9	W1BRI	PTL	PTL
2m	Brookline	145.160	na	K1MRA	D-Star	
	Belmont	145.430	146.2	KC1CLA	PTL	FTL: DARI
	Mendon	146.610		K1KWP	FTL	PTL
	Quincy	146.670		W1BRI	PTL	PTL
	North Reading	146.715		KC1US	PTL	PTL
	Weston	146.790		N1BE	PTL	PTL
	Boston	146.820		K1BOS	FTL	PTL
	<i>Remote receive in Brookline Boston: PL = 127.3</i>					
Marlborough	147.270	146.2	W1MRA	PTL	PTL	
1½m	Hopkinton	223.940	103.5	KB1LOY	PTL	FTL
	Quincy	224.400		N1KUG	PTL	FTL
	Weston	224.700		N1NOM	PTL	FTL
	Marlborough	224.880		W1MRA	PTL	FTL
70cm	Lowell	442.250	88.5	K1LVF	FTL	PTL: 446.775
	Weston *	442.700		KG1H	Network Hub 2 (PTL to Hub 1)	
	North Reading	446.775		W1DYJ	FTL	PTL
	Marlborough	448.225	na	W1MRA	D-Star	
	Marlborough	449.575	88.5	W1BRI	PTL	PTL
	Marlborough *	449.925		W1MRA	Network Hub 1	
33cm	Boston *	927.0625	D244	K1RJZ	PTL	PTL
	Marlborough *	927.700 PL out = 131.8		W1MRA	PTL	PTL
Marlborough		144.390	none	W1MRA	APRS Digipeater	
???		145.630	146.2	W1MRA	Fox Box	
*Internet	HUB1- 449.925: IRLP node 4133 / Echolink node 4133					
	HUB2 - 442.700: IRLP node 4136 / Echolink node 4136 Connected to 220 Reflector 9124 on Tuesdays					
	927.0625: IRLP 4977			Normally linked to the NE900 Reflec- tor, 9125. Linked to MMRA via IRLP for the TIAOS net. Normally linked together.		
	927.700: IRLP 4978					

Notes: FTL = Full Time Linked (or default state) PTL = Part Time Linked (on schedule or demand)

## President's Corner

### David Wolfe ~ KG1H

Well, the MMRA calendar year is almost over, and elections are upon us. Many updates to our repeater systems have been accomplished by our technical wizards, and several suggested and great updates have been set aside to the near future. Without these dedicated hams together with our elected officers, directors and trustees very little would have been accomplished this past year. Stagnation is not acceptable in this gargantuan organization: the MMRA.

When I initially sat down at my keyboard I didn't have any ideas to write about, however what quickly came to mind is my concern is that we the officers and many of the support staff are all getting older, our interests are changing, and/or moving out of the MMRA area. The newer members don't appear to be attracted to infiltrating the management end of the organization. Are us old hams scaring them away?

What do we need to do/say/communicate to these prospective, not necessarily younger hams, to attract them with their fresh ideas and energy? What sort of an event would attract them? The MMRA is not the only ham organization with this predicament. Maybe those MMRA net control operators could mention the gratification of being a leader as part of their introduction and closing statements.

**Next MMRA Business Meeting:  
Wednesday 20 June, 6:30 PM**

**Marlborough MA library  
35 W Main St,  
Marlborough, MA 01752**

***Bigelow Auditorium*  
Parking: 22 Witherbee Street  
All are invited.**

## Directions to the Campion Center

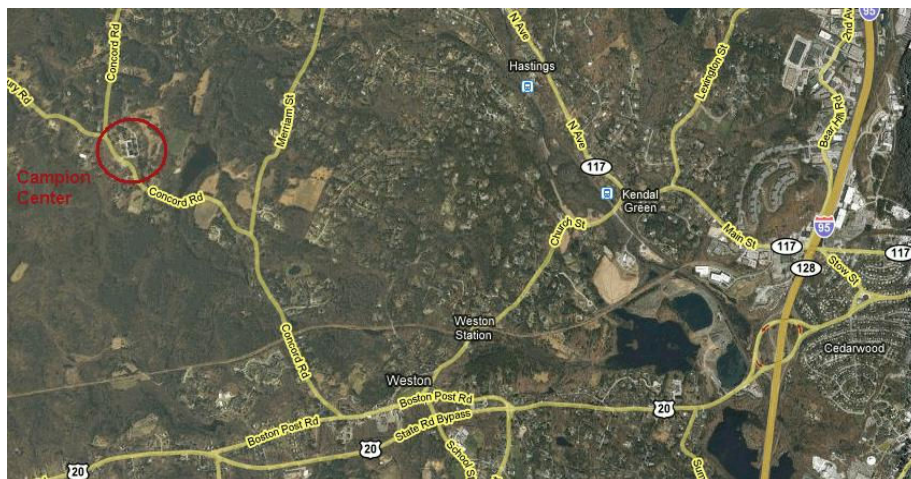
### From Route 128 (I-95):

From Route 128 (I-95) in Waltham, take the Route 20 exit and head west to the town of Weston. At the first major intersection, turn RIGHT on to Boston Post Road. Drive straight through the town center. After the center, turn right on to Concord Road. Then see below.

### From Route 20 heading East towards Weston:

Head East on Route 20. After entering Weston on Route 20 bear left onto Boston Post Road. From Boston Post Road turn left onto Concord Road.

The **Campion Center** is on Concord Road. However, before you get to it, there will be a fork on Concord Road where Concord road takes a turn to the left. You will find Campion a short distance after the fork. It will be a large building, with a dome, on your right.



## April Business Meeting ~ Larry Banks, W1DYJ, *clerk pro tem*

The meeting was brought to order at 6:35 pm at the Marlborough Library. Present were: Clark, N1NVK; John, WA1MDD; David, KG1H; Bob, K1IW; Brian, W1BRI; Dave, N1DCH; Kevin, K1KWP; and Larry, W1DYJ.

### Old Business: Upcoming Meetings

The Annual Meeting will be at the Campion Center on 16 May at 7 PM. Election of officers will be held. Nominations:

- ◆ KG1H David Wolfe – President
- ◆ WA1MDD John Spencer -- Vice President
- ◆ K1KWP Kevin Paetzold – Treasurer
- ◆ N1DCH David Hornbaker – Secretary
- ◆ N1NVK Clark Conti – Director
- ◆ N1DDK James Lee – Director

**The position of Clerk is unfilled; we need a nominee.**

After the elections and any additional business, Larry, W1DYJ, will present "One Ham's Journey with Antennas."

**Boxboro Convention:** After some discussion, it was decided that our September Membership Meeting will be held during the ARRL New England Boxboro Convention, the weekend of Sept. 7-9, date and time to be announced.

- ◆ Moved (K1WP), seconded (KG1H), and voted that we allocate \$100 for an advertisement in the Convention Program.
- ◆ Moved (K1WP), seconded (N1NVK), and voted that we allocate \$400 for "door prizes," with one of the prizes to be awarded to a participant of the membership meeting.

### Treasurer's Report

Kevin, K1KWP, detailed our financial situation. We are currently ahead for the year, although we are down about \$700 in dues. President David will send out a dues reminder.

### Boston Marathon MMRA Equipment (Bob, K1IW)

Everything worked really well this year. This is the first year we used HUB2 for linking. It ran like a trooper. In the future, we should continue to use HUB2, leaving HUB1 available for normal traffic. (Editor's note: Bob, K1IW, and John, WA1MDD, spent a great deal of time setting up net control at the Clay Center.)

### Hub 1 449.825 Repeater Status (Bryan, W1BRI)

> Checking out PA with repeater and all is OK, PA is putting out 75W with Kenwood repeater driving the input.  
 > Bypass mode is now working when there is no AC power  
 > Completed the interface cable and have the new repeater working with the Scom 7330 controller  
 > Getting all audio adjustments done while repeater and controller are on my bench before moving to site  
 > Racking up the entire system with duplexer, power meter, preamp and filters  
 > Building up all new RF interconnect cables, this will take some time

Hopefully Hub 1 will be back up by mid-May. However, the extended time it has taken to replace Hub 1 led to a discussion about emergency funds, which was originally discussed some months ago during budget discussions for this year.

- ◆ Moved (K1IW), seconded (N1NVK), and voted that we draft a proposal, to be voted on at the Annual Meeting, to the effect that we set aside \$2500 in an emergency fund. *This fund will be available to replace existing assets only in the event of a repeater system component failure.* Using this fund will require a vote of the Board of Directors. The specific language of this proposal must be drafted.

### Future Upgrade Discussion (Bob, K1IW)

We discussed the idea of upgrading the remaining controllers on the MMRA network to 7330's. There are only four left that do not have internet remote capability:

- Belmont/145.43 - Need controller only, internet connection available
- Hopkinton/223.94 - Needs controller and FreedomPop
- Hopkinton/449.575 - Needs controller and FreedomPop
- Mendon/146.61 - Needs controller and FreedomPop

We decided to upgrade Belmont before the others, mostly due to volunteer time limitations.

- ◆ Moved (W1DYJ), seconded (N1NVK), and voted that we allocate \$500 for a new Scom 7330 controller for Belmont.

### Current Repairs Needed (Bob, K1IW)

> The tone encoder on 146.82 in Boston is broken and needs to be replaced. This is a common issue with these MastrII encoders which will recur if we fix it. It is better to just buy a new one and be done with it (especially given the access at the Pru).

> The internet box up there is an old Ethernet to Serial that locks up if you leave it on more than two days or so, it should be replaced with a Raspberry Pi setup.

- ◆ Moved (N1NVK), seconded (KG1H), and voted that we allocate \$150 for repairs to Boston 146.82.

### New business: Trustee Status

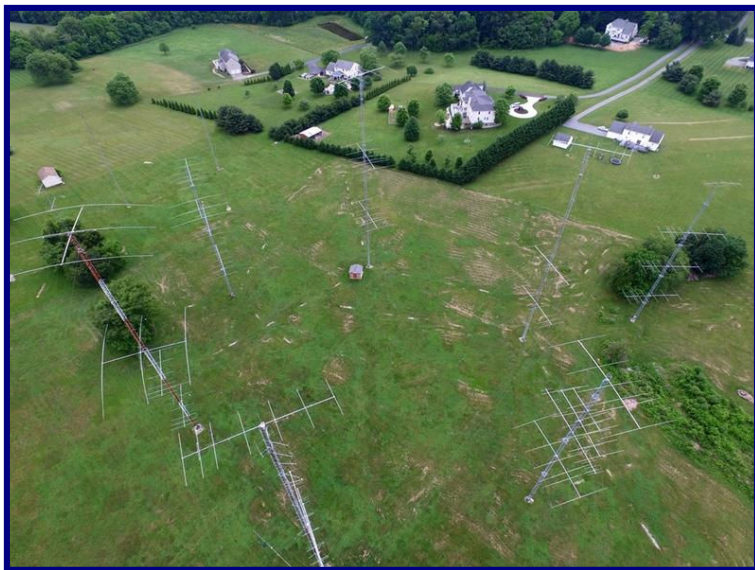
It was pointed out that a few of the repeater trustees do not attend meetings and do not vote when asked to do so via email. As trustees are appointed and not voted into office, it was decided to ask all current trustees if they wished to remain a trustee. Those who wish to remain are expected to [1] pay their dues; [2] attend a meeting now and then; and [3] vote on all email votes. The wording of this request needs to be finalized before it is sent.

The meeting was adjourned at 8:15 pm  
 Respectfully submitted, W1DYJ, clerk pro-tem



## March Membership Meeting ~ *The K3LR Super Contest Station*

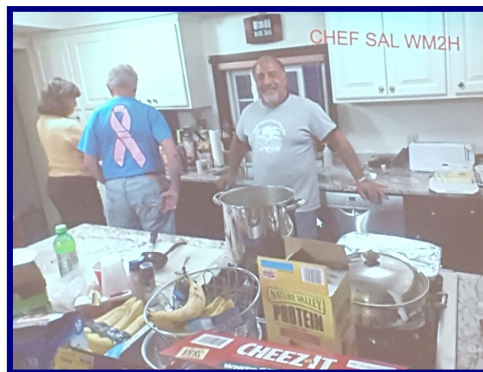
Bob, W5OV, showed off super-contest station K3LR, via SKYPE. When you drive I-80 from Pennsylvania into Ohio, you will notice an extremely large antenna farm - this is K3LR.



**The Antenna Farm**



**Watching the presentation**



**Superfood for a Super Station**



**20M @ 170'**



**18 el on 15M**



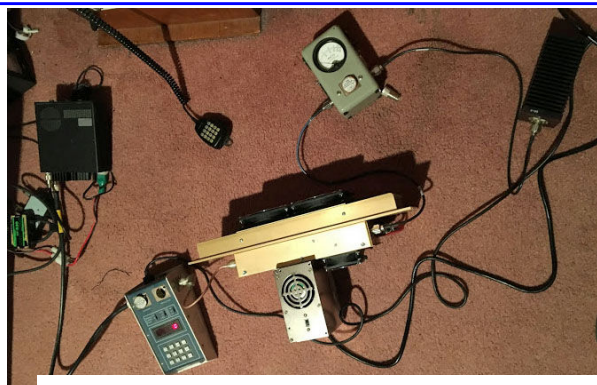
**One tower's base**

## The NEW Hub 1 ~ a "Teaser"

*Thanks to Bryan, W1BRI, for both the photos and all of the work.*  
Perhaps by the time you read this, Hub 1 will be back on the air!



**The Kenwood NXR-810 Repeater**



**Testing the new Henry RF power amplifier**

## Early Ham History – Part 5

**From W1DYJ:** I recently obtained an ARRL Handbook from 1962, the year I was first licensed. The first few pages are a wonderful, short history of the early years of Ham radio. I hope you enjoy reading this as much as I did. It is in 5 parts.

### Here is Part 5: *Technical Developments*

Throughout these many years the amateur was careful not to slight experimental development in the enthusiasm incident to international DX. The experimenter was constantly at work on ever-higher frequencies, devising improved apparatus, and learning how to cram several stations where previously there was room for only one! In particular, the amateur pressed on to the development of the very high frequencies and his experience with five meters is especially representative of his initiative and resourcefulness and his ability to make the most of what is at hand. In 1924, first amateur experiments in the vicinity of 56 Mc. indicated that band to be practically worthless for DX. Nonetheless, great "short-haul" activity eventually came about in the band and new gear was developed to meet its special problems. Beginning in 1934 a series of investigations by the brilliant experimenter, Ross Hull (later QST's editor), developed the theory of v.h.f. wave-bending in the lower atmosphere and led amateurs to the attainment of better distances; while occasional manifestations of ionospheric propagation, with still greater distances, gave the band uniquely erratic performance. By Pearl Harbor thousands of amateurs were spending much of their time on this and the next higher band, many having worked hundreds of stations at distances up to several thousand miles. Transcontinental 6-meter DX is not uncommon; during solar peaks, even the oceans have been bridged! It is a tribute to these indefatigable amateurs that today's concept of v.h.f. propagation was developed largely through amateur research.

The amateur is constantly in the forefront of technical progress. His incessant curiosity, his eagerness to try anything new, are two reasons. Another is that ever-growing amateur radio continually overcrowds its frequency assignments, spurring amateurs to the

development and adoption of new techniques to permit the accommodation of more stations. For examples, amateurs turned from spark to c.w., designed more selective receivers, adopted crystal control and pure d.c. power supplies. From the ARRL's own laboratory in 1932 came James Lamb's "single-signal" super-heterodyne—the world's most advanced high-frequency radiotelegraph receiver—and, in 1936, the "noise-silencer" circuit. Amateurs are now turning to speech "clippers" to reduce bandwidths of phone transmissions and "single-sideband suppressed-carrier" systems as well as even more selectivity in receiving equipment for greater efficiency in spectrum use.

During World War II, thousands of skilled amateurs contributed their knowledge to the development of secret radio devices, both in Government and private laboratories. Equally as important, the prewar technical progress by amateurs provided the keystone for the development of modern military communications equipment. Perhaps more important today than individual contributions to the art is the mass cooperation of the amateur body in Government projects such as propagation studies; each participating station is in reality a separate field laboratory from which reports are made for correlation and analysis. An outstanding example was varied amateur participation in several activities of the International Geophysical Year program. ARRL, with Air Force sponsorship, conducted an intensive study of v.h.f. propagation phenomena—DX transmissions via little-understood methods such as meteor and auroral reflections, and transequatorial scatter. ARRL-affiliated clubs and groups have operated precision receiving antennas and apparatus to help track earth satellites via radio. For volunteer astronomers searching visually for the satellites, other amateurs have manned networks to provide instant radio reports of sightings to a central agency so that an orbit might be computed.

The above is **COPYRIGHT 1962 by ARRL**. The Handbook back then cost \$3.50.

Here ends the readings from 1962



## Upcoming MMRA Meetings

**Note: Meeting locations are subject to change. Consult the MMRA website for the most up-to-date information.**

Wednesday, 20 Sept ~ No Membership Meeting Scheduled

Wednesday, 18 Oct ~ Business Meeting ~ not held

Wednesday, 15 Nov ~ Membership Meeting

*Topic: Astronomy! Radio! Cubes in Space!*

*Host: Bob Phinney, K5TEC*

Location: Clay Center, Brookline

Wednesday, 20 Dec ~ Business Meeting

Location: Marlborough MA library

Wednesday, 17 Jan ~ Membership Meeting

*This meeting was canceled due to snow*

Wednesday, 21 Feb ~ Business Meeting

Location: Marlborough MA library

Tuesday, 20 Mar ~ Membership Meeting — note one day early

*Topic: The K3LR Super-Contest Station (via Skype)*

*Bob Naumann, W5OV*

Location: Northborough Free Library

Wednesday, 18 April ~ Business Meeting

Location: Marlborough MA library

Wednesday, 16 May ~ Annual Meeting

*Topic: One Ham's Journey with Antennas*

*Larry Banks, W1DYJ*

Location: Campion Center, Weston

Wednesday, 20 June ~ Business Meeting

Location: Marlborough MA library

## Don't Forget! Join Us.

**Every Tuesday @ 8 PM**

**Technical, Informational and Other  
Stuff Net**

The MMRA's repeaters are linked Tuesday nights for the TIOS Net. Keep up with what's happening in the MMRA and ask your ham related questions.

### Net Control Operators:

Week 1	WA1JIM	Jimmy Devaire
Week 2	W1DYJ	Larry Banks
Week 3	KC1CLA	Ed Curley
Week 4	K1KWP	Kevin Paetzold
Week 5	KB1OQA	Tom Turner

To connect using Echolink / IRLP during the Net:

- Echolink Conference \*NEW-ENG2\*
- IRLP node 4133

Previous issues of the MMRA Newsletter are available at:  
[www.mmra.org](http://www.mmra.org) → [Newsletter Archive](#) (on the left)

## MMRA Leaders

### Executive Board — Officers

President	David Wolfe	KG1H
Vice President	John Spencer	WA1MDD
Secretary	John McGovern	W1JMC
Treasurer	Kevin Paetzold	K1KWP
Clerk	open	

### Executive Board — Directors

Director »2018	Clark Conti	N1NVK
Director »2018	James Lee	N1DDK
Director »2019	Bob DeMattia	K1IW
Director »2019	Roger Coulson	WA1NVC

### Technical Officer

* Technical Officer	Bryan Cerqua	W1BRI
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### Repeater Trustees

* Belmont 145.430	Ed Curley	KC1CLA
* Boston 146.820	John Mullaney	K1BOS
* Brookline Rcv 146.82	Bob Phinney	K5TEC
* Boston 927.0625	Rick Zach	K1RJZ
* Hopkinton 223.940	James Cahill	KB1LOY
* Hopkinton 449.575	Bryan Cerqua	W1BRI
* Lowell 442.250	Vince De La Flor	K1LVF
* Marlborough 53.810, Quincy 146.670;	Bryan Cerqua	W1BRI
* Marlborough: 29.68, 144.390, 147.270, 224.880,		
448.225, 449.925, 927.700 — all as W1MRA		
	Bill Northup	N1QPR
* Mendon 146.610	Kevin Paetzold	K1KWP
* N. Reading 146.715	Bruce Pigott	KC1US
* N. Reading 446.775	Larry Banks	W1DYJ
* Quincy 224.400	Bill Dunn	N1KUG
* Weston 146.790	Bob Evans	N1BE
* Weston 224.700	Eddie Mulhern	N1NOM
* Weston 442.700	David Wolfe	KG1H

### Additional, non-Voting

* Newsletter Editor	Larry Banks	W1DYJ
* Emerg. Coord.	Kevin Paetzold	K1KWP
* Pub. Serv. Coord.	David Wolfe	KG1H
* VEC Liaison	Bill Wade	K1IJ
* Net Manager	Larry Banks	W1DYJ
* Web Page Editor	Bob DeMattia	K1IW

\* Appointed

### MMRA VE Sessions

Check here for the schedule:

<http://www.mmra.org/exam.html>

Contact: Bill Wade, K1IJ 617-699-3670

Evenings 6 - 10 PM Weekends 8 AM to 10 PM.

Accredited by the ARRL VEC

***Membership Meeting ~ Wednesday, 16 May 7PM***  
***Annual Meeting & Elections***  
***One Ham's Journey with Antennas ~ Larry Banks, W1DYJ***  
**Location: Campion Center, Weston**  
**Talk-in: 146.79 pl 146.2**

**Calendar of Ham Radio Flea Markets**  
**For more information: <http://mit.edu/w1gsl/Public/ne-fleas>**

12 May	E Greenbush NY	EGARA FireCo	8-10 Sep	Boxboro MA	FEMARA NE Conv
19 May	Goshen CT	SBARC @FG	8 Sep	Windsor CT	VR+C Mus 115 Pierson LN
20 May	Cambridge MA	Flea at MIT	15 Sep	Alexander ME	StCVARC @EISch
2 Jun	Brookline NH	NEARC antique	16 Sep	Cambridge MA	Flea at MIT
2 June	Hermon ME	PSARC @HS	6 Oct	Brookline NH	NEARC antique
9 Jun	Windsor CT	VR+C Mus 115 Pierson LN	12-13 Oct	Deerfield NH	NEARfest XXIV @FG
17 Jun	Cambridge MA	Flea at MIT	21 Oct	Cambridge MA	Flea at MIT
15 Jul	Cambridge MA	Flea at MIT	27 Oct	Gales Ferry CT	TCARC @FireCo
4 Aug	Milo ME	PARC @Kiwanis	3 Nov	Bourne MA	FARA @UpperCC VoTech
11 Aug	St Albans VT	STARC @Elks	1 Dec	Windsor CT	VR+C Mus 115 Pierson LN
19 Aug	Cambridge MA	Flea at MIT	9 Mar	Chicopee MA	MtTomARA @Castle
19 Aug	Adams MA	NoBARC @FG	7 Apr	Framingham MA	FARA 9AM@KeefeHS
26 Aug	Newtown CT	CARA @TownHall	3-4 May	Deerfield NH	NEARfest XXV @FG

THE MINUTEMAN REPEATER ASSOCIATION

MMRA  
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Stow, MA. 01775-0669

Email: [contact@mmra.org](mailto:contact@mmra.org)



WE'RE ON THE WEB  
[HTTP://WWW.MMRA.ORG/](http://www.mmra.org/)